

Schoenoplectus × *juncohotarui* Yashiro (Cyperaceae), a New Hybrid from Chiba Prefecture, Central Japan

Katsuhiro YASHIRO

Sakura Higashi High School, Jonai-cho 278, Sakura, Chiba, 285-0017 JAPAN

(Received on may 8, 2003)

A new natural hybrid, *Schoenoplectus* × *juncohotarui*, is described. *Schoenoplectus hotarui* (Ohwi) Holub and *S. juncoides* (Roxb.) Palla are presumed to be the putative parents. The hybrid is intermediate in significant characters between the putative parents, and shows much lower pollen stainability. The hybrid was found in wet places in Yokoshiba-machi and Hikari-machi, Chiba Prefecture, central Honshu, Japan.

Key words: Chiba Prefecture, natural hybrid, new taxon, *Schoenoplectus*.

Recently *Schoenoplectus hotarui* (Ohwi) Holub has conspicuously declined in Chiba Prefecture due to reduction of its preferred habitat, undisturbed wet places. While *S. juncoides* (Roxb.) Palla, which is usually found in paddy fields and other disturbed wet places, has increased in number. *Schoenoplectus hotarui* and *S. juncoides* are found to grow together in several wet places around lagoons in Chiba Prefecture, central Honshu, Japan. *Schoenoplectus* plants similar to *S. hotarui* and *S. juncoides* are also found sporadically in such wet places. Yashiro and Onozawa (1991) presumed that this *Schoenoplectus* is a natural hybrid between *S. hotarui* and *S. juncoides*.

Schoenoplectus hotarui has culms 0.8–1.4 mm thick, smooth, cylindrical, inflorescences with 2–5 ovoid to ovoid-globose spikelets, widely ovate scales 4.9–5.5 mm long, and three stigmas (equally trifid). It differs from *S. juncoides* which has culms several-angled, 2.0–2.7 mm thick, inflorescences with 4 to 9 oblong-cylindrical spikelets, ovate scales 3.9–4.2 mm long, and two stigmas, sometimes with one reduced

three stigmas. As mentioned above, these two taxa differ in habitat preference (Koyama 1956, Yashiro in press).

The shape and size of the culms, and the length of scales and anthers were measured in twenty individuals of the hybrid and its putative parents (Table 1). The results indicate that the hybrid is intermediate in all quantitative characters, and the shape of the culms of the hybrid is shared with *S. hotarui*. The hybrid has pistils with two equal and usually one reduced stigmas (Fig. 1).

The spikelets of the hybrids are generally twisted. The extended and twisted spikelets are quite similar to those of the natural hybrids, *S. ×igaensis* and *S. ×trapezoideus* (Iwase et al. 1998, Yashiro in press).

Pollen viability was estimated by the stainability of pollen grains using the anilineblue lactophenol method (Hauser and Morrison 1964). Pollen stainability was measured in 500 or more grains from flowers of one inflorescence. Pollen grains were divided into two types; stained (Fig. 2B, a), and unstained and shrunken (Fig. 2B, b). The specimens whose pollen stainability was ex-

Table 1. Comparison among *Schoenoplectus hotarui*, *S. juncooides*, and their putative hybrid (*S. ×juncohotarui*)

	<i>S. hotarui</i>	<i>S. ×juncohotarui</i>	<i>S. juncooides</i>
Culm			
shape	cylindrical	cylindrical	several-angled
diameter (mm)	0.8–1.4	1.2–1.7	2.0–2.7
Spikelet*	2–5	3–6	4–9
Scale length (mm)	4.9–5.5	4.3–4.6	3.9–4.2
Anther length (mm)	1.4–1.6	1.5–1.7	1.7–1.9

*Number of spikelets per a culm.

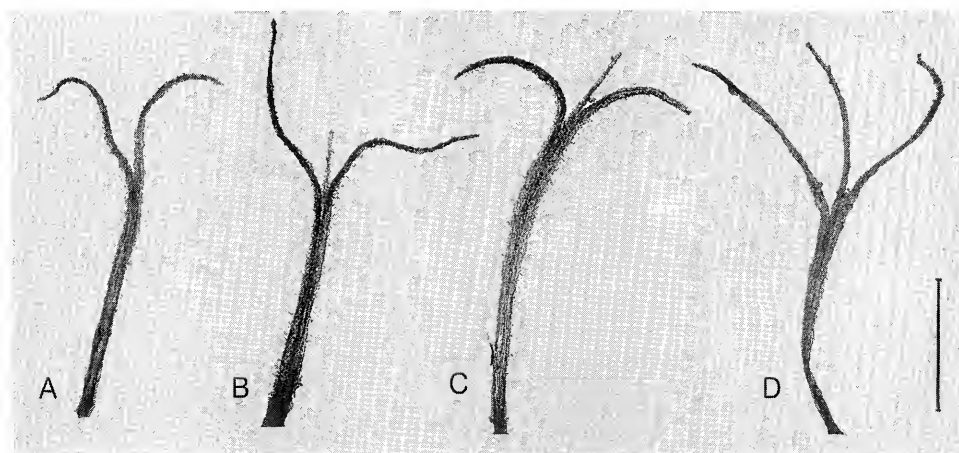


Fig. 1. Style and stigma shape of three *Schoenoplectus* plants. A, B: *S. juncooides* (K. Yashiro 21006). C: *S. ×juncohotarui* (K. Yashiro 21011). D: *S. hotarui* (K. Yashiro 21001). Scale bar = 1 mm.

Table 2. Pollen stainability of *Schoenoplectus hotarui*, *S. juncooides* and *S. ×juncohotarui*

Species	Voucher specimen (CBM)	Pollen stainability (%)
<i>S. hotarui</i>	K. Yashiro & M. Ichihara 21016	92
<i>S. juncooides</i>	K. Yashiro & M. Ichihara 21017	96
<i>S. ×juncohotarui</i>	K. Yashiro & M. Ichihara 21018	35

aminated are listed in Table 2. Pollen stainability was 92 % in *S. hotarui* and 96 % in *S. juncooides*, but only 35 % in the hybrid (Table 2).

Schoenoplectus ×juncohotarui Yashiro, hybr. nov. [Fig. 3]

Schoenoplectus hotarui (Ohwi) Holub \times *S. juncooides* (Roxb.) Palla.

Hybrida naturalis putativa intermediaque

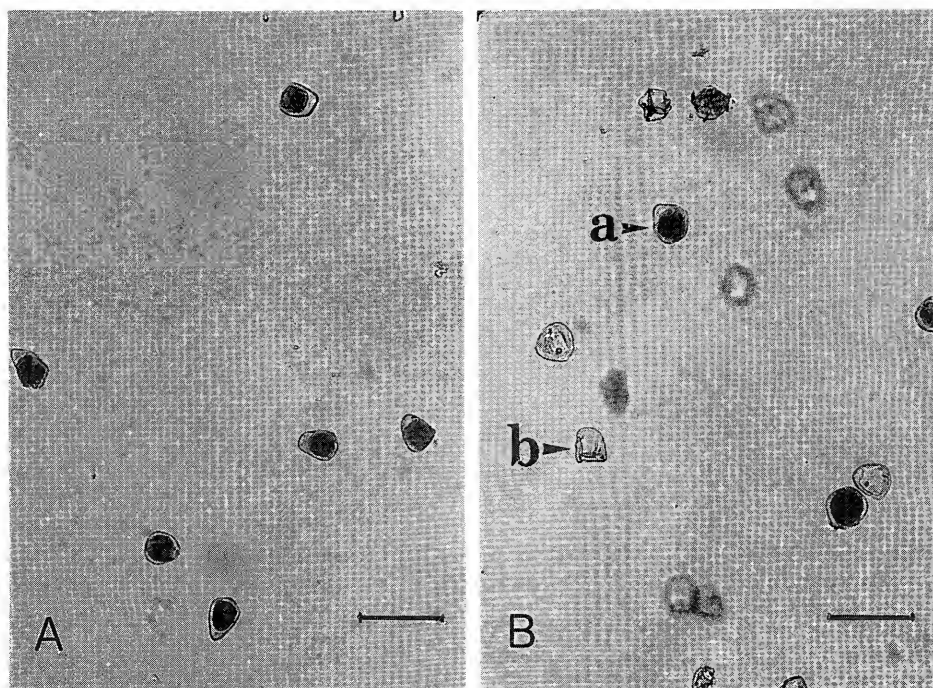


Fig. 2. Pollen grains stained with anilineblue lactophenol solution of two *Schoenoplectus* plants. A. *S. ×juncohotarui* (K. Yashiro & M. Ichihara 21018). B. *S. juncooides* (K. Yashiro & M. Ichihara 21017). a: a stained pollen grain. b: a non-stained and shrunken pollen grain. Scale bars = 0.1 mm.

inter *Schoenoplectum hotarui* (Ohwi) Holub et *S. juncoideum* (Roxb.) Palla. Ab *S. juncoide* culmis teretibus non angularibus differt. Ex *S. hotarui* stigmate vulgo bifide persaepe cum uno ramulo rundimentali et multis spiculis satis dignoscenda.

Tufted in clumps without conspicuous rhizome. Culms 35–55 cm tall, 1.2–1.7 mm thick, subterete, light green, dull, base clothed with few sheaths. Sheaths 3–4, lower ones scale-like, brownish, upper ones 6–12 cm long, pale green, obliquely truncate, orifice mucronate. Inflorescence a pseudolateral head with 3–6 spikelets; bract 6–11 cm long, 1-grooved on ventral surface, apex rather suddenly subacute, base dilated. Spikelets ovoid-globose, 12–22 mm long, 5–6 mm wide, straw-colored, twisted generally,

densely many-flowered but low maturity. Glumes ovoid to broadly ovoid, 4.3–4.6 mm long, 2.8–3.2 mm wide, thickly membranaceous, pale brown-tinged, keel broad, green, 1-or 3-nerved, apex rounded to shallowly emarginate and mucronate. Achenes broadly obovoid, unequally biconvex, 1.9–2 mm long, 1.8–1.9 mm wide, base suddenly contracted to cuneate, apex rounded to mucronate, surface dark brown when mature, shiny, transversely wrinkled; style 3–3.5 mm long, somewhat flattened; stigmas 2, occasionally with a rudimentalry one, or 3 (equally trifid). Hypogynous bristles 5, retrosely scabrous except base, 3 as long as or slightly shorter than achenes, 2 slightly longer than achenes. Anthers 1.5–1.7 mm long.

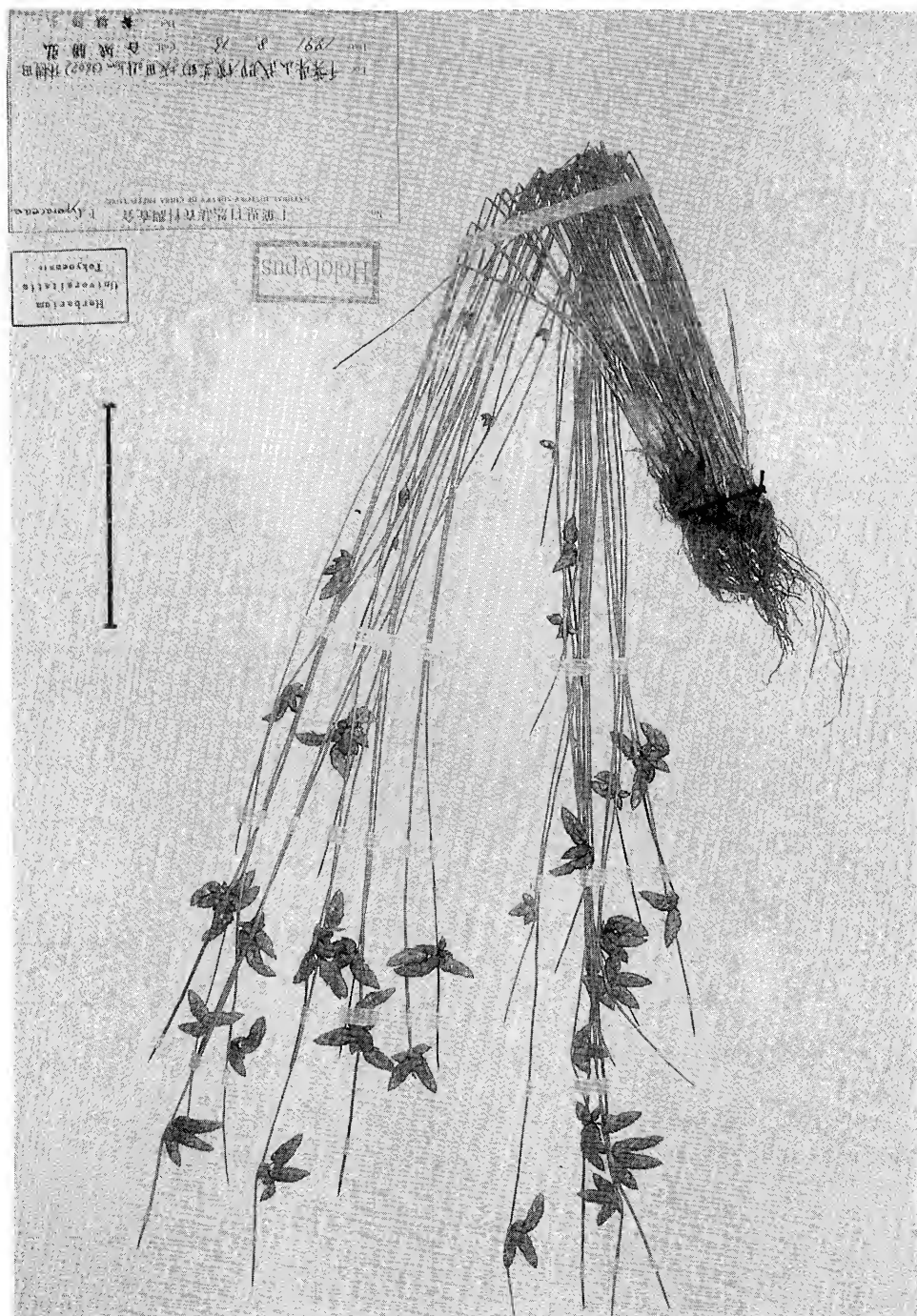


Fig. 3. Holotype of *Schoenoplectus xjuncobotanyi* (K. Yashiro, TI). Scale bar = 5 cm.

Type: Japan. Honshu: Chiba Pref., Sanbu-gun, Yokoshiba-machi, Sakata. In wet places. K.Yashiro s. n. Aug. 15, 1991 (fl.) (TI-holo; TNS, CBM BS-029638-iso) (Fig. 3).

Japanese name: Hotarui-modoki (nov.).

Other specimens examined. Japan. Honshu: Chiba Prefecture: Sanbu-gun, Yokoshiba-machi, Sakata. K. Yashiro 21011, Jul. 28, 1991 (CBM BS-110318); K. Yashiro 21014, Aug. 15, 1991 (CBM BS-029638); K. Yashiro & T. Noguchi s. n., Sep. 15, 1991 (CBM BS-92509); K. Yashiro & M. Ichihara 21015, 21018, Sep. 16, 2002 (CBM); Sousa-gun, Hikari-machi, Miyagawa, K. Yashiro & Y. Endo 21012, 21013, Aug. 15, 1996 (CBM).

I wish to express my sincere thanks to Professor Hideaki Ohba, the University of Tokyo, for critical reading the manuscript and for his helpful suggestions. I also thank to Dr. Tatsuyuki Ohba, for his kind advice and Dr. Yasuhiko Endo, University of Ibaraki, for his valuable comments and suggestions on this study.

References

- Hauser E. J. P. and Morrison J. H. 1964. The cytochemical reduction of nitro blue tetrazolium as an index of pollen viability. *Amer. J. Bot.* **51**: 748–752.
- Iwase T., Yashiro K., Noguchi S. and Kubota M. 1998. Flora of the moors in Chosei-mura-Past and Present. *Bull. Biol. Soc. Chiba* **48** (1): 6–22 (in Japanese).
- Koyama T. 1956. *Contributio ad Floram Asiaticam*

Novam-Guineam inclusum. *Bot. Mag. Tokyo* **69**: 209–215.

Yashiro K. (in press). Cyperaceae. In: Chiba Prefectural Government, Chiba, Flora of Chiba Prefecture (in Japanese).

— and Onozawa N. 1991. Sakatazyoshi-no-shzen. In: Nature Conservation Division of Chiba Prefectural Government, 9–87 pp. (in Japanese).

Appendix: Specimens examined of *Schoenoplectus hotarui* and *S. juncoides* collected in Chiba Prefecture. All specimens are deposited in CBM.

Schoenoplectus hotarui. Sanbu-gun, Yokoshiba-machi, Sakata, K. Yashiro s. n., July 8, 1990 (BS-133846); K. Yashiro s. n., July 28, 1991 (BS-166142, 110322); K. Yashiro s. n. (BS-29639) 21001, 21004, Aug. 15, 1991; K. Yashiro & T. Noguchi s. n., Sep. 15, 1991 (BS-92513); K. Yashiro s. n., July 31, 1997 (BS-125038); K. Yashiro & M. Ichihara 21005, 21016, Sep. 16, 2002; Sousa-gun, Hikari-machi, Miyagawa, K. Yashiro s. n. Aug. 19, 1989 (BS-133853, 145416, 145417, 163028); K. Yashiro s. n., Sep. 10, 1995 (BS-139971); K. Yashiro & Y. Endo s. n., (BS-108365), 21002, 21003, Aug. 15, 1996.

Schoenoplectus juncoides. Sanbu-gun, Yokoshiba-machi, Sakata, K. Yashiro s. n., July 12, 1989 (BS-42240, 162653); K. Yashiro s. n., July 8, 1990 (BS-133845); K. Yashiro s. n., July 28, 1991 (BS-110319, 163998); K. Yashiro 21006, 21009, Aug. 15 1991; K. Yashiro s. n., July 12, 1992 (BS-43484); K. Yashiro s. n., July 25, 1992 (BS-43459); K. Yashiro s. n., July 31, 1992 (BS-125047); K. Yashiro & M. Ichihara, nos. 21010, 21017, Sep. 16, 2002; Sousa-gun, Hikari-machi, Miyagawa, K. Yashiro s. n., Oct. 9, 1988 (BS-133840); K. Yashiro s. n., Sep. 10, 1995 (BS-139975); K. Yashiro & Y. Endo s. n., (BS-108366), 21007, 21008, Aug. 15 1996; K. Yashiro s. n., Aug. 5, 1997 (BS-125048, 125049).

谷城勝弘：ホタルイとイヌホタルイの推定雑種

千葉県においてホタルイとイヌホタルイの雑種と推定される複数の個体を発見した。ホタルイは稈が丸く柱頭は各々同長で3岐し、イヌホタルイは稈に稜角があり柱頭は2岐または1本が他より明らかに短い3岐のものが混じることで特徴づけられる。これに対し、雑種個体では稈は丸く柱頭は2岐し、これに極短の1岐をとまなうものと各々

が同長の3岐のものが混じり、ホタルイとイヌホタルイの特徴を同時にもっている。瘦果はほとんど不稔である。稈の径、花穎長はホタルイとイヌホタルイの中間となり、花粉の染色性はこれらに比べ低い。この推定雑種をホタルイモドキ *Schoenoplectus × juncohotarui* Yashiro と命名した。

(千葉県立佐倉東高等学校)